Amendment to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1.-71. (Cancel)

72. (New) A method to characterize a formation penetrated by a borehole, comprising:

disposing within the borehole a logging instrument having a transmitter antenna and a receiver antenna, at least one of the antennas having a dipole moment that is tilted but not transverse relative to a longitudinal axis of the instrument;

rotating the logging instrument azimuthally within the borehole;

transmitting, at various azimuthal angles, electromagnetic energy from the transmitter antenna into the formation;

receiving at the receiver antenna voltage signals as a function of the azimuthal angle of the logging instrument;

fitting the voltage signals to an azimuthal-angle-dependent function; and

characterizing the formation using the function.

73. (New) The method of claim 72, wherein the fitting step is executed while the voltage signals are being received.

74. (New) The method of claim 72, further comprising stopping the fitting when convergence has been achieved.

75. (New) The method of claim 72, wherein the transmitting, receiving, and fitting are repeated for subsequent acquisition cycles.

76. (New) The method of claim 72, wherein the function used in the fitting is sinusoidal and dependent on components of a coupling tensor.

77. (New) The method of claim 72, wherein fitting coefficients of the function are dependent on at least one of resistivity, borehole deviation, relative dip, and azimuth angle.

78. (New) The method of claim 72, wherein the function includes one or more of a constant term, a $\sin\phi$ term, a $\cos\phi$ term, a $\sin 2\phi$ term and a $\cos 2\phi$ term.

79. (New) The method of claim 72, further comprising using the function for geosteering or to determine formation parameters.

80. (New) The method of claim 72, where the fitting comprises using a Fourier Transform or a Fast Fourier Transform.

81. (New) The method of claim 72, wherein the dipole moment of one antenna is azimuthally rotated relative to the dipole moment of the other antenna.

82. (New) The method of claim 72, further comprising combining the fitting coefficients of the function to generate a symmetrized and/or an anti-symmetrized response.

83. (New) A method to characterize a formation penetrated by a borehole, comprising:

disposing within the borehole a logging instrument having at least first and second symmetrization pairs of antennas, wherein at least one of the antennas has a dipole moment that is tilted but not transverse relative to a longitudinal axis of the instrument;

azimuthally rotating the logging instrument within the borehole;

transmitting, at various azimuthal angles, electromagnetic energy from a transmitter antenna of the first symmetrization pair into the formation;

receiving at a receiver antenna of the first symmetrization pair first voltage signals as a function of the azimuthal angle of the logging instrument;

transmitting, at various azimuthal angles, electromagnetic energy from a transmitter antenna of the second symmetrization pair into the formation;

receiving at a receiver antenna of the second symmetrization pair second voltage signals as a function of the azimuthal angle of the logging instrument;

fitting the first voltage signals to a first azimuthal-angle-dependent function;

fitting the second voltage signals to a second azimuthal-angle-dependent function; and

characterizing the formation using the first and second functions.

84. (New) The method of claim 83, wherein at least one of the antennas is azimuthally rotated relative to at least one of the other antennas.

85. (New) The method of claim 83, wherein the first symmetrization pair is azimuthally rotated relative to the second symmetrization pair.

86. (New) The method of claim 83, wherein the first symmetrization pair is coplanar with the second symmetrization pair.

87. (New) The method of claim 83, wherein the fitting steps are executed while the first and second voltage signals are being received.

88. (New) The method of claim 83, further comprising stopping the fitting when a convergence criterion has been achieved.

89. (New) The method of claim 83, wherein the transmitting, receiving, and fitting are repeated for subsequent acquisition cycles.

90. (New) The method of claim 83, wherein the functions used in the fitting are sinusoidal and dependent on components of a coupling tensor.

91. (New) The method of claim 83, wherein fitting coefficients of the functions are dependent on at least one of resistivity, borehole deviation, relative dip, and azimuth angle.

92. (New) The method of claim 83, wherein the functions include one or more of a constant term, a $\sin\phi$ term, a $\cos\phi$ term, a $\sin 2\phi$ term and a $\cos 2\phi$ term.

93. (New) The method of claim 83, further comprising combining fitting coefficients of the functions to generate a symmetrized and/or an anti-symmetrized response.

94. (New) The method of claim 83, further comprising characterizing the noise of the first and second voltage signals using fitting coefficients of the functions.

95. (New) The method of claim 83, wherein the functions are sinusoidal and fitting coefficients of the functions used to characterize the noise are second or higher harmonic terms of the functions.

96. (New) The method of claim 83, further comprising characterizing the noise of the first and second voltage signals by combining the first and second voltage signals.

97. (New) The method of claim 83, further comprising using fitting coefficients of the functions to determine a bed orientation angle.

98. (New) The method of claim 83, further comprising evaluating each function at two azimuthal angles.

99. (New) The method of claim 98, further comprising using fitting coefficients of the functions to determine a bed orientation angle, and wherein the two azimuthal angles are 0 and 180 degrees relative to the bed orientation angle.

100. (New) The method of claim 83, further comprising calculating a common azimuthal angle for the first and second voltage signals using weighted averaging of fitting coefficients for real and imaginary parts of the first and second voltage signals.

101. (New) The method of claim 83, further comprising applying an inversion technique to interpret the formation characteristics.

102. (New) The method of claim 83, further comprising combining fitting coefficients of the functions to determine a distance to one or more bed boundaries.